STATINTL

4 August 1970

[redacted]

Since the attached handbook on Proposed Standards for Labelling Magnetic Tapes was drafted over a year ago I called Gerry Rosenkrantz at National Archives for up to date information. I thought the draft might have been coordinated, edited, and published but such was not the case.

NARS received responses from all agencies. Half thought the standard was fine the other half felt the big IBM 360 was not compatible with the older computers many agencies had.

Task Force Group 7 was set up to solve the government agency standard for labels. The task force expired and an interim ad hoc group was set up. Bureau of Standards says Archives cannot call this a standard. Only Bur of Standards can issue a standard. Archives can call it a procedure if they want and Mr. Rosenkrantz said they may very well publish this paper as a procddure. Gerry said that the situation is no better in the commercial shops that he has visited. Someone in Bureau of Standards was too vociferous about the incompatibility of IBM computer with others in the government. Manufacturers want a slight difference in their product. The total picture appears to be unsettled and considered to be a politically sensitive subject. I didn't quite understand all the ramifications involved.

The Records Centers are storing over ½ million tapes. Some of these will be transferred to the Archives and Archives wants to be able to read and write the tapes. Some standard labelling procedure is needed. NARS, at this point, will accept tapes providing they are documented enough according to their internal procedures so that they are able to get the program to read the tapes.

In view of the indecision about the proposed draft we can:

1. Wait for the hassle between Archives and Bureau of Standards to be settled.

2. Adopt whatever procedure the Archives publishes as an interim measure.

3. Write a procedure for storing tapes in our Records Center as we should have some documentation of our tapes.

Rather than to adopt a "wait and see" attitude I think we should write up our own procedure to take care of our in-house problems.

STATINTL

[redacted]

STATINTL

[redacted]

~~Walt Lee comment~~ STATINTL

It seems from [redacted]

notes on ~~[illegible]~~ my memo to him that he feels we have not "Defined the Problem the Agency faces with regard to Magnetic Tapes." He has focused on the term "Archived Tapes" and this obscures for him any appreciation of the fact that the problem also applies to "Inactive Temporary Tapes." STATINTL

Let's discuss our next move [redacted]

11 December 1969

STATINTL MEMORANDUM TO: [redacted]

SUBJECT : Proposed Standards for Labelling Magnetic Tapes

1. The attached proposed handbook was written by National Archives outlining procedures for the transfer and storage of magnetic tapes in the Federal Records Centers. When adopted, the instructions will apply to all Federal agencies.

2. This Agency does not store its tapes in the Federal Records Center. However, I envision a similar problem with tapes at our Records Center and recommend the adoption of these procedures for our Agency. Since you are the DDS Information Processing Coordinator I propose that the attached handbook be referred to the Information Processing Board for review and comments. STATINTL

[redacted]
Chief, Records Administration Branch

Attachments:
Proposed Transmittal to IPC
6 NARS Handbooks of 30 June 1969

I see no point in doing this until we have defined what our problem is. To say that the gov't has a problem and we expect to have the same one isn't good enough. Has anyone identified any archival tapes? How many? How many tapes do we now have in storage? What are the retention schedules? What do we know about tapes that are being held in tape libraries by computer centers? Much of the NARS requirement

is based on information they will need to reconstituted tapes periodically - All of this is inapplicable here. We have no facilities and no intention of acquiring any to do the kinds of things DMPAS is concerned with.

We have to define a problem and show a need before we can do anything with them.

[redacted] STATINTL

69-5587

MEMORANDUM TO: Chairman, Information Processing Board

SUBJECT : Standards for Storing and Retrieving Magnetic Tapes

1. Copies of the attached handbook are submitted to you for consideration by the Board members.

2. The handbook is currently being coordinated by the National Archives. When it is published the procedures will apply to all Federal agencies wishing to transfer magnetic tapes for storage in the Federal Records Center. Since this Agency maintains its own Records Center we will encounter similar difficulties with storage of magnetic tapes. ~~It is quite possible that in the distant future the Agency might store its tapes in Federal Records Centers and be subject to these rules.~~

3. With the trend towards greater use of magnetic tape many tapes will contain data of archival value and steps should be taken to preserve this information. According to National Archives magnetic tape is not an archival medium. Its shelf life is no more than twelve years. Consequently, periodic recopying and conversion to new tapes may be required.

4. In order to identify data as archival and to provide for record retrieval additional content descriptions and classification information are needed. This handbook provides the Federal standards and procedures for storing magnetic tapes so that they may be identified, and processed at a future date. The varying degrees of storage and service capabilities for a Records Center are also outlined in the handbook. Currently, our Records Center is performing "A" service which in terms of this handbook, means that it provides shelf storage space only. No conditioning or guarantee of data safety is made. Retrieval is by box number not content.

5. It is recommended that this handbook be reviewed by the Information Processing Board to determine and establish the rules and requirements for whatever degree of Agency magnetic tape storage and service is desired in our Records Center. In addition, we must decide whether to adopt this handbook of instructions or prepare a similar one to outline our procedures.

[redacted]
STATINTL
DDS Information Processing Coordinator

Next 1 Page(s) In Document Exempt

PROPOSED

STANDARDS FOR LABEL INFORMATION CONTENT TO ACCOMPANY MAGNETIC TAPE REELS WHEN ACCESSIONED BY THE NATIONAL ARCHIVES

DRAFT
For Discussion Purposes Only

June 30, 1969

Written by G.J. Rosenkrantz

National Archives & Records Service

Approved For Release 2001/08/09 : CIA-RDP74-00390R000300440012-4

Approved For Release 2001/08/09 : CIA-RDP74-00390R000300440012-4

PROPOSED

STANDARDS FOR LABEL INFORMATION CONTENT TO ACCOMPANY MAGNETIC TAPE REELS WHEN ACCESSIONED BY THE NATIONAL ARCHIVES

1. Background - With the passage of time it has become more and more evident that some of the records and information stored on magnetic tapes has archival value equal to that of more conventional paper records. The archival records on machine-readable media, as a percentage of the total volume of such records, may be small but the number of reels containing this type of data makes up a significant number. By statute, the National Archives is the final repository for archival records regardless of the media on which the records are carried, whether the media be paper, film, machine-sensible substance, or other material. In time, the National Archives expects to be offered magnetic tapes to be made a part of the Archives of the United States. In order to utilize the records on the magnetic tapes there must be a means of having access to them. As a means to reaching that objective this standard for label information content to accompany magnetic tape reels is promulgated.

According to the best available technical information, magnetic tape, unlike paper or microfilm, is not an archival recording medium. Therefore, the readability of a reel of magnetic tape cannot be guaranteed beyond the guaranteed shelf life of a tape stored in conditioned tape storage space at a Federal Records Center. Twelve

years is the best current estimate of magnetic tape shelf life. This may be extended as experience accumulates.

In order to insure a shelf life beyond one year, magnetic tapes must be cleaned, checked, and conditioned to avoid destruction of the recorded data. Experience also dictates that periodic handling is required to insure the continued safety of the data for the storage period. This currently requires rotation and retensioning. Because of the limited life of data recorded on magnetic tape, periodic recopying is required for retention in excess of shelf life. In order to perform this operation, sufficient information must accompany the tape reel to allow mechanical verification of the copying process. Data which is identified either as archival or for which individual record retrieval is required needs additional content description and classification information to accompany it. The information required to accompany magnetic tape reels for each grade of service is specified in this standard.

2. Purpose - To provide standards and procedures by which magnetic computer tapes containing records and data whose retention is to be guaranteed for a specified time can be stored, identified, retrieved and processed by computers at some future date.

This purpose is achieved when an agency submitting tape files for permanent or long term storage to NARS supplies sufficient information on and with magnetic tapes to enable NARS to meet this objective. This standard describes the forms, procedures, label formats and label contents required to implement this capability for various grades of service.

3. Applicability

These instructions apply to all Federal agencies which record or originate magnetic tape data records as defined in Title 44 USC, Chapter 10, Section 366 and regulations issued under that act and which offer such records for accessioning by the National Archives and Records Services, particularly those included as part of the National Archives of the United States.

4. Definition of Terms

A complete glossary of terms defining technical aspects of this standard is enclosed as **Appendix A**. Certain key terms are duplicated here because of their frequent and special usage within the context of this standard.

File - A file is a major collection of information, consisting of all the logical records pertaining to a general subject. Conceptually, this term relates to such collections as a Payroll File, a Requisition File, etc.

File Set - A file set is a collection of one or more related files recorded on one or more reels of magnetic tape. A file set may consist of:

- One file recorded on a single reel of tape
- More than one file recorded on a single reel of tape.
  For purposes of this standard, the files may differ only in coverage of information. In all other aspects, such as logical record formats, character codes and logical field or item descriptions, they must be identical.
- One file recorded on more than one volume.
- More than one file recorded on more than one volume.
  For purposes of this standard, the files may differ only in coverage of information; e.g. geography or time period. In all other aspects, such as logical record formats, character codes, sorting sequence and logical field or item descriptions, then must be identical.

Logical Record - A logical record is a collection of related items of data, which for operating system logic purposes is treated as a unit of information. Conceptually a logical record corresponds to a transaction, an individual account, etc. The structure of the record may otherwise be arbitrary, and determined by the designer of the information system.

Block - A block is a group of contiguous characters recorded on and read from magnetic tape as a unit. A block may contain less than one, one or more than one logical records.

Volume - In this standard and related USASI standards, this term is completely synonymous with "reel of digital magnetic computer tape".

Label - A label is a block at the beginning or end of a volume or a file which serves to identify, describe, or delimit that volume or file.

Label Group - A label group is a collection of contiguous labels of the same type.

Graphic Character Set - A graphic character set is the collection of printed symbols which corresponds to specific bit configurations present on a file. These include the alphabet, numerical digits and all manner of special graphics such as punctuation marks, foreign alphabets, mathematical symbols etc.

Control Character Set - The control character set consists of non-printing characters which control the physical action of devices attached to the computer. Examples are start of message (SOM) and end of message (EOM) on teletype machines or the End of file character (EOF) which Delimits both the beginning and end of tape files.

Collating Sequence - The collating sequence is the order in which the computer which prepared the file sorts the character set. For example, in some computers the alphabet tests lower than numeric characters; in others numbers are low. Therefore, in tape files the sequence which two records labeled "A-1" and "A-Z" respectively would be different depending on the collating sequence.

Shelf Life - For purposes of this standard, denotes the time that data recorded on magnetic tape can be guaranteed readable under various conditioning and storage procedures.

5. Procedures for Submission and Recall of Magnetic Tapes to FRC's.

This section describes the procedures and services available at FRC's regarding storage and retrieval of magnetic tapes. Three grades of storage and retrieval service are available to data originating agencies. The types of storage and retrieval services together with the documentation and procedures required to meet these grades of services are described in the remaining paragraphs of this section.

5.1 Grades of Storage and Retrieval Service - Three grades of storage service are available. These are:

'A' Service - Provides shelf storage space only. No conditioning of tapes or guarantee of data safety is made. Tapes may be stored in unconditioned space.
'B' Service - Magnetic tapes whose data is to be retained with a guarantee of shelf life. These tapes will be tested, conditioned and stored in environmentally controlled space.
'C' Service - Magnetic tape with data of archival value or for which individual data record retrieval is desired. The physical processing and storage conditions of these tapes will be the same as for 'B' service.

Each of these storage services will have an equivalent capability of retrieval service associated with it. These are:

- For 'A' service, retrieval will normally be by box number at the FRC.
- For 'B' service, retrieval will normally be by reel or group of reels.
- For 'C' service, retrieval will normally be by file or file set. An additional capability will be selective retrieval of individual records or record groups.

5.2 Accessioning of Magnetic Tape Files at an FRC – The magnetic tape accessioning section of a Federal Records Center will be responsible for performing the validity checking, inspection and conditioning of all magnetic tapes which require 'B' or 'C' service. Tapes requiring 'A' Service only, will be accompanied with a Standard Form 135 and will be stored only. Such a set of tapes may contain any arbitrary mix of files, formats and data.

Tapes submitted for 'B' or 'C' service must contain the documentation and labels required for that grade of service. A reel of tape containing field and record content descriptions may be submitted in lieu of Standard Form 135-MT.

Tape files which fail to meet the label standards described in section 6 of this standard may be returned to the agency for correction. However, minor deficiencies may be corrected at the center itself in cooperation with the originating agency.

5.3 Forms Required for Submission of Magnetic Tapes — A different amount of information is required for each grade of service requested by the submitting agency. The 'A' Service requires only that the present Standard Form 135 be submitted with boxes of tapes. The 'B' Service requires that Standard Form 135-M be correctly filled out and submitted with each File or File Set of tapes. Instructions for filling this form out will be found in the Records Management Handbook entitled "Submission and Retrieval of Magnetic Tapes to Federal Records Centers". The 'C' Service requires that Standard Form 135-MT be correctly filled out in addition to Standard Form 135-M and submitted with each File and File Set. Instructions for filling out this form correctly will be found in the Records Management Handbook.

If the labels at the beginning of the file are already recorded on tape, Standard Form 135-M need only contain a notation to that effect. A printout of the label records should also accompany the file documentation so that the accessioning branch may check it for completeness.

5.4 Physical Standards of Tapes Being Submitted for Storage - No quality check will be made of magnetic tapes submitted under the 'A' Service. Therefore, Tape quality is solely the responsibility of the submitting agency. Tapes which require 'B' or 'C' service must meet minimum standards of physical quality as specified in **Appendix B** of the handbook. Meeting these standards will insure that the tape material will not deteriorate with age over the retention period.

Other physical standards checks will guarantee that the data was received at NARS, was readable on a tape drive at that time, and will be processed for long term storage and safeguarding of the information contained on that file.

5.5 Recall and reference procedure - Until a permanent recording medium is found to store magnetic tape information, files recalled by an agency within shelf life will be on the same reels originally submitted. Upon return of these reels to an FRC, they will be physically inspected and processed the same as a new accession. This will ensure the safety of the information. However, the administrative accession procedure will not be repeated. Standard Form 11-M will be used to recall and return tape records to an FRC. When record sampling or sections of a tape file are required, the record selection criteria must be specified by the requestor on Standard Form 11-M. This grade of service must be coordinated with the Reference Section of the specific FRC.

5.6 Restrictions on Use of Records - Reference requests will be serviced in accordance with any access restrictions or security classifications indicated on the Standard Form 135-M. These restrictions will be observed in the same manner as those on paper records.

Originating agencies wishing to establish specific release limitation or security classification codes for the magnetic labels may do so in coordination with NARS. One position in both the volume header and file header label records is provided in this standard. Since any character is allowed in these two positions, as many as 60 or 120 release limitations and security classifications are available to each agency depending on the number of binary bits in a character. The volume label header accessability field denotes the highest classification of the physical tape. The File label header accessability field denotes the accessability of a particular file of records on that reel. Reel security classification may not be less than the highest security classification of any single file or record on that tape.

6. Label Contents on Magnetic Tape

The proposed USASI Standard Magnetic Tape Label for Information Exchange (X.3.2/552; June 7, 1967) is the basis upon which this label standard is designed. This standard is supplemental to the proposed USASI standard in that several label records otherwise denoted as optional are mandatory on tapes being submitted for long term retention or archival storage to Federal Records Centers.

The magnetic tape label requirements vary with the grade of service required by the agency. These are as follows:

- 'A' Service; no magnetic labelling requirements.
- 'B' Service; requires all Required USASI Labels and the following optional labels.
  a. Second File Header label (HDR2) as specified in 3.3.3 of USASI standard and includes here in section 7 for reference.
  b. User Volume labels (UVL1) specified in Section 6.1.1 of this standard
- 'C' Service; requires all labels specified in 'B' Service plus the User Header Labels (UHLX) described in section 6.2 of this standard.

6.1 Arrangements of Labels and Tape Marks on Magnetic Tape Reels - The proposed USASI Tape Label Standard makes mandatory the presence of four labels at a minimum for each reel of tape. Their names and reference section numbers in this standard where specifications for their contents are as follows:

a) Volume Header label (Section 7.1)

b) First File Header Label (Section 7.2)

c) First End-of-File Label (Section 7.3)

d) First end-of-volume label (Section 7.4)

6.1.1 Structuring the File. In order to allow validation and certification of data records on tapes submitted for grade 'B' and 'C' service, required labels and tape marks shall be used to establish the file structure according to the following rules, as illustrated in Figure 6.1-1. In that figure, the beginning of the tape is at the left, and the end of the tape is at the right. Required labels are indicated by the first 4 characters of their identifiers, and tape marks are indicated by asterisks (*).

The rules and the figure are presented as though there were no optional Operating System Labels or User Labels. Rules for using these optional classes of labels are set forth in later sections.

Figure 6.1-1

FILE STRUCTURES - B and C Service

Single Volume File

VOL1 UVL1 UVL2 --- UVL9 HDR1 HDR2 --- HDR9
(UHL1 UHL2----UHL2) * ---Data Blocks---EOF * *
Required for 'C' Service only

MULTI Volume File - First tape

VOL1 UVL1 UVL2 --- UVL9 HDR1 HDR2 --- HDR9 UHL1
UHL2---UHLn*---Data Blocks---*EOV**

MULTI Volume File - subsequent tapes

VOL1 HDR1 *---- Data Blocks--- *EOV**
VOL1 HDR1 *---- Last Volume Data--- *EOF**

MULTI File Volume

VOL1 UVL1 UVL2---UVL9 HDR1 HDR2---HDR9
(UHL1 UHL2 UHL2 --- UHL2) * -- File A -- *EOF * HDR1 * ----File B--- * EOF * *
Required for 'C' Service only

MULTI-Volume Multi-File; First Reel

VOL1 UVL1 UVL2---UVLn HDR1 HDR2---HDR9
(UHL1 UHL1 UHL2----UHL2)*---File A--- *EOF**
HDR2--- File B--- *EOV**

MULTI-Volume Multi-File; Intermediate Reels

VOL1 HDR1 *--Continuation of File B---* EOV * *

MULTI-Volume Multi File - Last Reel

VOL1 HDR1 *---End of File B---*EOF* HDR1*---File C--- * EOF * *

Volume Header Label. Every volume shall have a Volume Header Label as the first block in the volume. The Volume Header Label shall not be used at any other place in the volume.

File Header Label. Every file shall be preceded by a File Header Label. Whenever a volume ends within a file, the continuation of that file in the next volume shall also be preceded by a File Header. Every File Header shall be immediately followed by a Tape Mark.

File Trailer Label. The last block of every file shall be followed by a File Trailer Label. A Tape Mark shall immediately precede, and another Tape Mark shall immediately follow, every File Trailer. The File Trailer that appears at the end of the last (or only) file in a volume set shall be followed by two Tape Marks, rather than one.

End-of-Volume Label. Whenever a volume ends within a file, the last block of the file in that volume shall be followed by a Volume Trailer Label. One Tape Mark shall immediately precede, and two Tape File sets shall not be terminated by an End-of-Volume Label.

6.1.2 Whenever end-of-volume and end-of-file coincide, the labelling configuration shall be one of the following:

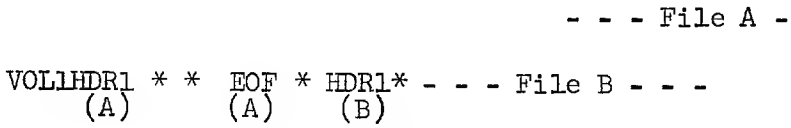

Figure 6.1-2

```
- - - File A - - - * EOF * HDR ** EOV * *
                    (A)   (B)

VOL1HDR1* - - - File B - - -
```

Figure 6.1-3

6.1.2.1 An an option, it will be allowable that any file of a set may start at the beginning of a volume. If this procedure is used, the labelling configuration of Figure 6.1-4 must be followed for all intermediate (but not first or last) volumes.

```
--- File A --- *EOF (A) * EOV **
VOL1 HDR1 (B) * --- File B ----
```

Figure 6.1-4

This configuration permits the initiation of any file within a file set at the beginning of a volume. When this configuration is used, the block count (field 12) of the end-of-volume label is undefined. In addition, file sets will not be terminated by an End-of-Volume label group.

Field	Length	Form Columns	Field Name	Description
1	4	1-4	Label Record Identifier	Must be "UHL1"
2	3	5-7	Record Name Number	Must be consecutively numbered from ØØ1
3	4	8-11	Occurs maximum count	For Header-trailer file structure, indicates maximum number of trailer records. If no repetitions, leave field blank.
4	4	12-15	Occurs control field	Enter number of data field of UHL2 which gives count of trailers. Otherwise leave blank.
5	4	16-19	Length-maximum number of characters in record	Enter maximum logical record size in characters or BYTES
6	1	20	Length-type	Describes record format see table 6.2.1 for contents required.
7	4	21-24	Length-control field number	If record length is indicated by a data element, enter the Field name label number from the appropriate UHL2 label record.
8	1	25	Redefined-Y/N	If the file contains multiple record formats enter a "Y". If not, enter "N".
9	3	26-28	Redefines-record name number	Enter the Record name number of the record which may share storage with record. (e.g. Trailer 1, number ØØ3 is receipt, Trailer 2, ØØ4 is shipment.
10	4	29-32	Parity Control field	Normally blank, unless tape is recorded in mixed (BINARY and DISPLAY) mode format with a look-ahead field. Enter the number of the field denoting parity of the next block.
11	20	40-59	Record Name	Contains alphabetic name of record
12A	20	60-79	Comments	May be extension of record name or text description

Field	Length	Form Columns	Field Name	Description
12B	4	60-63	Key 1	Field number of major sort key if file is sequenced. Otherwise blank
13	4	64-67	Key 2	Field number of intermediate and minor sort keys if file is sequenced. Otherwise blank
14	4	68-71	Key 3	"
15	4	72-75	Key 4	"
16	4	76-79	Key 5	"
17	1	80	Continuation Indicator	Indicates that this label is continued on next line. Used only for comments and sorting key extensions. If "X" is entered, sorting key numbers are entered in 60-79. If 'C' is entered entire next label from columns 8 to 79 may contain text. Columns 1-7 must be duplicated. If blank, no continuation cards will follow.

6.2 User Volume Labels-Two types of user volume labels are required to meet the requirements of Archival storage and retrieval. One type describes the character set, whether the USASI standard, a NARS registered non-USASCII-8 standard commercial character set or a unique non-standard coded character set. A second type describes the record formats on tape for purposes of processing, conversion and retrieval with a minimum of supplemental information recorded on paper documentation.

The label requirements are designed to furnish information to computer operating systems in the future so that both format and code conversion can take place without the requirement for unique computer program writing for each file/computer combination.

Only one User volume label is required to specify a standard or NARS registered non-standard graphic character set and collating sequence. A more complex set of labels is required to completely specify special graphic character sets and collating sequences. Situations where these labels would be required are special graphic character sets and collating sequences which do not conform to the binary character value sequence of the USASI standard.

6.2.1 User Volume Labels for Standard USASCII-8 and Registered non-standard character sets.

Only one User Volume Label is required to specify the character sets, collating sequence and graphic printing characters of tapes recorded under these standards. **Appendix C** lists the current registered standards and contains a copy of the USASCII-8 Code for Information Exchange.

Field	Name	Length	Description
1	Label Identifier	3	Must be "UVL"
2	Label Number	1	Must be "1"
3	User Volume Label Count	2	Must be "01"
4	GRAPHIC Character Set Identifier	12	Must contain Identification of registered character code set and collating sequence left justified and blank filled. e.g. "USASCII-8" or "IBM-EBCDIC" or "HON-BCD-COM"
5	Reserved for future use	62	Blank

User Volume Labels 2 to 9

Field	Name	Length	Description
1	Label Identifier	3	Must be "UVL"
2	Label Number	1	Must be 2 to 9
3	Graphic character set codes in USASCII Code sequence	Variables	Beginning with the USASCII space graphic and ending with the USASCII Delete (DEL) character, indicates the actual bit configuration used to print a given display character. For reference purposes, if the USASCII-8 or USASCII seven bit code is not used enter the codes in the USASCII sequence.

Example: The letter capital "N" in USASCII-8 code is shown as the two hexadecimal digits "AE"; the same letter in IBM's EBCDIC code is represented by the two hexadecimal digits "D5". The code "D5" is to be entered in character position 47 of the standard graphic character set.

6.2.2 User Volume Label for non-standard character sets and collating sequences.

More than one User Volume Label is required to specify non-standard character sets. This section describes the formats and entries needed to furnish intelligible information to a future computer operating system.

---------- User Volume Label 1 ----------

Field	Name	Length	Description
1	Label Identifier	3	MUST be "UVL"
2	Label Number	1	Must be "1"
3	User Volume Label Count	2	Must be count of labels
4	Graphic character set count.	12	As defined in USASCII-8 standard. Must be an integer zero filled to left.
5	Control character set count.	3	As defined in USASCII-8 standard. Must be an integer, zero filled to left.
6	Non-standard graphic character set count.	3	Requires NARS Registry Number in field 9, below. Must be an integer, zero filled to left.
7	Non-standard control character set count	3	Requires NARS Registry Number in field 10 below. Must be an integer, zero filled to left.
8	Collating Sequence of character set.	3	"BIN" or "SPE" If collating sequence is based on Binary values, enter "BIN". If other than Binary, enter "SPE".

Field	Name	Length	Description
9	NARS non-standard graphic character set registry number	10	Alphanumeric registry number, left justified and space filled. Identified document containing pictures of non-standard graphic characters.
10	NARS non-standard control character set registry number	10	Alphanumeric registry number, left justified and space filled. Identified document containing specifications of machine actions not specified in USASCII-8 control character set. e.g. Photocomposition device control characters.
11	Reserved for future use	30	Blank at present.

6.3 User Header Labels - These labels are required only for 'C' grade service or when digital tapes are being submitted to the Archives of the United States. They must be in front of the first reel of a file or file set. Complex file structures and record formats may require several hundred label records to adequately define the records, fields and codes within a file.

It would be inefficient to read up to several hundred label records each time a file is processed on a computer. Therefore, a separate User header label tape, not normally processed with the file at its originating agency is the recommended technique for furnishing the required information. The information on this tape is designed not only to furnish information to a computer operating system for reading, but when printed on paper for human comprehension. An additional by-product of this label tape is the ability of one special software system to provide reference and retrieval service for the indefinite future.

Two types of user header labels are required to furnish this capability. The first is required to describe the record types, names and lengths found on the tape. The second is required to define the structure and content of the data elements within each record in the file. Included are the definitions of each code value within each field. A printout of these label records is thereby made largely self-explanatory. This capability is extremely important where researchers wish to extract samples and tabulations and otherwise manipulate automated data records in the future.

6.3.1 User Header Labels - I; File and Record Definition Form

This format is required to furnish information to the File Input-Output Control System (IOCS). The functions of blocking, deblocking counting and routing records into the appropriate areas is the computer memory for specialized query and processing is directed by the information contained in these labels. The specific content requirements of form 135-MT Part 1 are described below.

Table 6.3.1

Record Length Type Codes (Column 20)
and Control Number Field Entries

Code in Column 20	Description	Contents of Control # Field
F	Fixed alphabetic records. Packed decimal allowed	Blank
D	Variable length alphabetic records with length in characters specified in decimal	Number of length control field
V	Variable length records with length in characters specified in Binary (Binary Recording Mode only)	Number of length control field
S	Symbol controlled unblocked variable length records (Separator characters must be identified in character set label record)	Blank
T	Blocked symbol controlled variable length records. Record mark separator character must be identified.	Blank

Note: File Header Label 2 (HDR2) contains block length information through which the blocking factor can be calculated.

PROPOSED STANDARD FORM 135 MT (PART 1) Page __ of __

1 4
U H L 1

FILE AND RECORD DEFINITION LABELS

REC. NAME NO. (5)	OCCURS MAX COUNT (9)	OCCURS CONTR. FIELD (12)	LENGTH MAX. CHAR (16)	LENGTH TYPE	LENGTH CONTR FIELD NO. (21)	REDEF. Y/N	REDEF. REC. NAME NO.	PARITY CONTR. FIELD NO. (29)	RECORD NAME (33)	COMMENTS OR SEQUENCE CONTROL. KEY 1 (64)	KEY 2 (64)	KEY 3 (68)	KEY 4 (72)	KEY 5 (76)	CONT (80)
ØØ1	1		135	F		N			TYPICAL-HEADER-FIXED-LENGTH	ØØ17					
Ø2	10	13	8ØØ	V	ØØ23	Y	Ø11		VARIABLE-LENGTH-RECORD	ØØ14	ØØ22	ØØ3Ø	ØØØ4		
Ø3			6ØØ	D	Ø14	N			DEFIMAL-FIELD-CONTROLS-LENGTH OF RECORD						
Ø4			15ØØ	S		N			SYMBOL-CONTROLLED-LENGTH-RECORD						
Ø5	20	15	8Ø	F		Y	ØØ2								
Ø6			5ØØ	F		N		Ø1	MIXED-MODE-TAPE-BINARY-DECI	MAL-WITH LOOK AHEAD					

6.3.2 USER HEADER LABELS - II; FIELD DEFINITIONS

This label format is required for all digital data tapes being submitted to the archives of the United States or for which grade 'C' service is required. The purpose of this information is to allow computer selection of individual records or record sets from tape files. This selection will be specified by a requestor using the field descriptions and code values indicated in these labels. The other major purpose of these labels is to make the record descriptors themselves self-explanatory.

Following is the description of the specific entries required to describe the field structure and contents of digital data files. This is form 135-MT Part 2.

USER HEADER LABEL 2 INSTRUCTIONS

Field	Length	Form Columns	Field Name	Description
1	4	1-4	Label Record Identifier	Must be "UHL2"
2	4	5-8	Field Name Number	Must be an increasing number on consecutive labels except; value or continuation labels must have same number as content description label.
3	3	9-11	Record Name Number	Must be identical to one of the "UHL1" record name numbers.
4	4	12-15	Repetition Max Count	Enter the maximum number of times this field may be repeated in an individual record as an integer. If not repeated, leave blank.
5	4	16-19	Repetition Count Field Number	If the repetition count varies from record to record, enter the field name number which indicates the number of times this field appears in record. Otherwise leave blank.
6	1	20	Field Length - Type	Enter the one character code which denotes the manner in which field length is determined. See Table 6.3.2.-1 on allowable entries.
7	4	21-24	Field Length-Maximum	Enter the maximum possible length of the field in Bits, Bytes, or characters as appropriate.
8	4	25-28	Field Length-Control Field Number	If the field is variable in length with type 'V' in form column 20, enter the field name number of the counter field. For other required entries see Table 6.3.2.-1.
9	2	29-30	Field Length Symbol Value	If the field length type is 'S', enter the octal or hexadecimal value of the control symbol used to indicate field boundaries. See Table 6.3.2.-1 for discussion of heirarchies of control symbols and word marks.

Field	Length	Form Columns	Field Name	Description
10	3	31-33	Field Format/ Content-Type	Contains a three letter code denoting format of the field. See Table 6.3.2.-2 for allowable entries.
11	15	34-48	Field Format/ Content-Picture or Value	May be blank or contain format description or value entries depending on prior field. See Table 6.3.2-2 for allowable entries.
12	20	49-68	Data Name	Contains any 20 alphanumeric characters with no imbedded blanks if field is being used to hold name.
13	11	69-79	Comments	May be blank or contain any additional descriptive information.
14	1	80	Continued	Indicates that this is a continuation of the preceding label record if it is not blank. A suggested entry if more than one continuation label is required would be serial numbering of the continuation labels.

Note: If Form Column 80 is not blank entire label from form column 12 to 79 is available for any textual description desired. As many as 15 continuation labels may be attached to one field definition.

Table 6.3.2.-1

FIELD LENGTH TYPE CODES ON

USER HEADER LABEL 2 (UHL2) RECORDS

Code Entry	Description
F	Fixed length field
V	Variable length field - Length is indicated by Field Name number entered in Form Columns 25-28 (Field Length - Control Field Number) which must match another User Header Label 2 record.
S	Variable length field-separator symbol controlled. The octal or hexadecimal value of the field separator character must be entered in the "Field Length-Symbol Value Field".
G	Variable length field group or subrecord. This code is intended for symbol controlled field group with multiple level separator symbols. In this case, the label field "FIELD FORMAT-TYPE" must contain the entry "CON" to indicate that the "PICTURE" field contains the control symbol heirarchy. The primary use of this entry type is in formatted file structure.
L	This entry is used to denote repeating field groups which are count controlled. In this case, the repetition field must contain a count and "FIELD LENGTH - CONTROL FIELD NUMBER" must contain a Field name number present within the record group.

Table 6.3.2-2

FIELD FORMAT/CONTENT TYPE CODES

Code Entry	Description
DIS	Field characters are standard alphanumeric graphic symbols. "PICTURE" must be used to indicate numerics and decimal fractions.
PDC	Packed Decimal Number (4 Bits per character)
BIN	Fixed point binary number. Use "PICTURE" to indicate binary point
DFL	Floating point number composed of display characters.
PFL	Floating point number composed of packed decimal numbers.
BFL	Floating point number composed of binary numbers.
CBF	Complex numbers in floating point binary format.
CBX	Complex number in fixed point binary format.
PIC	Requires COBOL "PICTURE" clause characters to describe field. Note: "PICTURE" characters are optional on all other type entries.
VAL	Defines this user header label as one containing a code value and description of that value. Used primarily to define code characters. The "VALUE" field requires the format 'AAA = CODE DESCRIPTION' where "AAA" may be any number of code characters. (e.g. "Ø1 = RECEIPT")
CON	Used to display control character heirarchy if field length type code is 'G'. Field separator codes are shown in picture field of label.

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FILE AND RECORD DEFINITION LABELS Page __ of __

1 4

U H L 2

FIELD NAME NUMBER 5	REC. NAME NO. 9	REPETITION MAX. COUNT 12	REPETITION COUNT FIELD NO. 16	FIELD LENGTH TYPE 20	FIELD LENGTH MAX. 21	FIELD LENGTH CTRL. FIELD NO. 25	FIELD LENGTH SYM VAL 29	FIELD FORMAT/CONTENT TYPE 31	FIELD FORMAT/CONTENT PICTURE OR VALUE 34	DATA NAME 49	COMMENTS 69	CONT 80
ΦΦ01	ΦΦ1			F	20			DIS		STANDARD-A/N FIELD		
ΦΦ02	ΦΦ1	10		F	32			BIN	S16(9)V15(9)	FIXED-POINT-BINARY-FRACTION		
ΦΦ02	ΦΦ1	USE	DTO		DEFINE AN			ARRAY	OF NUMBERS IN A 32 BIT MACHINE WORD LIST			C
ΦΦ03	ΦΦ1			S	35		54	DIS		VARIABLE-LENGTH-FIELD	SYMBOL	
ΦΦ04	ΦΦ1			V	60	ΦΦ14		DIS		VARIABLE-FIELD-COUNTER=LENGTH		
ΦΦ05	Φ01			F	60			BFL		ASSUMED-SIGNED-IN-CP	U-WORD FORM	
ΦΦ06	ΦΦ1			F	10			PDC		ASSUMED-INTEGER-VALUE	SS PICTURE	
ΦΦ07	ΦΦ2			F	12			BIM	12(9)	UNSIGNED BINARY CODE	SEE BELOW	
								VAL	Φ1=SHIPMENT			
								VAL	Φ2=RECEIPT			
								VAL	Φ3=EMERGENCY REQUISITION			
								VAL	Φ9=BACK ORDER			
ΦΦ07	ΦΦ2	THE	PREC	GOING	4	LA		BEL	S SHOW HOW TO DOCUMENT FIELD CONTENTS FOR			C
ΦΦ07	ΦΦ2	AGE	NCY	CODES	ETC	IN		TAPE	FILES.			C

7. USASI REQUIRED LABEL CONTENTS

This section describes the field contents and formats of the four required labels of the proposed USASI standard. They are included here for reference purposes. Their place on the tape is as shown in Figure 6.1-1.

In this section, the letter "a" denoting character type means any alphanumeric character. The letter 'n' denoting character type means decimal digits only.

7.1 Volume Header Label Format

Field	Length	Field Name	Description
1	3	Label Identifier	Must be VOL
2	1	Label Number	Must be 1
3	6	Volume Serial Number	Six "a" characters permanently assigned by the owner to identify this physical volume (i.e., reel of tape).
4	1	Accessibility	An "a" character which indicates any restrictions on who may have access to the information in the volume. A "space" means unlimited access; any other character means special handling, in accordance with instructions furnished with the Standard Form 135-M.
5	26	Reserved for Future Standardization	Must be "spaces"
6	14	Owner Identification	Any "a" characters, identify the owner of the physical volume. Pending the development of a standard Federal government wide agency code, the contents should be furnished on the standard form 135.
7	28	Reserved for Future Standardization	Must be "space"
8	1	Label Standard Level	1 means the labels and data formats on this volume conform to the requirements of this standard. Tapes submitted for 'B' and 'C' grade service must contain a 1 here.

7.2 First File Header Label Format

Field	Length	Field Name	Description
1	3	Label Identifier	Must be HDR
2	1	Label Number	Must be 1
3	17	File Identifier	Any "a" characters which must be shown on the Standard Form 135-M.
4	6	Set Identification	Any "a" characters to identify the set of files of which this is one. This identification must be the same for all files of a multi-file set.
5	4	File Section Number	The file section number of the first Header Label of each file is 1. This applies to the first or only file on a volume and to subsequent files on a multi-file volume. This field is incremented by one on each subsequent volume of the file.
6	4	File Sequence Number	Four "n" characters denoting the sequence (ie-0001, 0002, etc.) of files within the volume or set of volumes. In all the labels for a given file, this field will contain the same number.
7	4	Generation Number (optional)	Four "n" characters denoting the current stage in the succession of one file-generation by the next. When a file is first created, its generation number is 1.
8	2	Generation Version Number (optional)	Two "n" characters distinguishing successive iterations of the same generation. The generation version number of the first attempt to produce a file is 0.
9	6	Creation Date	A "space" followed by two "n" characters for the year, followed by three "n" characters for the day (001 to 366) within the year.

7.2 (contined)

Field	Length	Field Name	Description
10	6	Expiration Date	Same format as Field 9. This file is regarded as "expired" when today's date is equal to, or later than the date given in this field. When this condition is satisfied, the remainder of this volume may be overwritten. To be effective on multi-file volumes therefore, the expiration date of a file must be less than, or equal to the expiration date of all previous files on the volume.
11	1	Accessibility	An "a" character which indicates any restrictions on who may have access to the information in this file. A "space" means unlimited access; any other character means special handling, in accordance with the instructions furnished with the Standard Form 135-M
12	6	Block Count	Must be "zeros".
13	13	System Code (optional)	Thirteen "a" characters identifying the Operating System that recorded this file.
14	7	Reserved for future standardization	Must be "spaces".

7.3 First End-of-File Label Format

Field	Length	Field Name	Description
1	3	Label Identifier	Must be EOF.
2	1	Label Number	Must be 1
3 thru 11	Total 50	Same as corresponding fields in the First File Header Label (optional)	Same as corresponding fields in the First File Header Label.
12	6	Block Count	Six "n" characters denoting the number of data blocks (exclusive of labels and Tape Marks)since the preceding HDR Label Group.
13 and 14	Total 20	Same as corresponding fields in the First File Header Label (optional)	Same as corresponding fields in the first File Header Label.

7.4 First End-of-Volume Label Format

Field	Length	Field Name	Description
1	3	Label Identifier	Must be EOV
2	1	Label Number	Must be 1
3 thru 11	Total 50	Same as corresponding fields in the First File Header Label (optional)	Same as corresponding fields in the First File Header Label
12	6	Block Count	Six "n" characters denoting the number of data blocks (exclusive of labels and Tape Marks) since the preceding HDR Label Group.

APPENDIX C

NARS Register of Character Code Sets

1. Purpose and Scope

This section contains the register of acceptable character code sets which may be specified in the User Volume Label 1 (UVL1). A magnetic tape recorded in one of these codes is acceptable for submission to an FRC for long term retention in excess of the current guaranteed shelf life or for archival submission to the Archives of the United States.

2. Register of acceptable standard character code sets.

NARS — 00001	USASCII-8	standard (8 Bits)
NARS — 00002	USASCII	standard (7 Bits)

3. Expansion of Register

A project is underway to list the tape bit, parity and density configurations of all digital tape drives in the Federal Inventory. Current plans call for procuring equipment and accepting tapes recorded only in accordance with FIP (Federal Information Processing) standards. In this case, the applicable standard is FIPS-4 as published in the Federal Register. FIPS-4 references USAS X3.22-1967 entitled "Records Magnetic Tape for Information Exchange, (800 BPI, NRZI)". Magnetic tape recorded in this mode, either 7 or 9 track is readable on one of two types of tape drives. Tapes recorded in other formats must eventually be converted to this format or another applicable standard. If desired, NARS will provide this service on a contract basis.

Character code sets not compatible with one of the USASCII standards are translatable with appropriate computer programs. They will be accepted provided there is a translation table on the labels or the character code set is registered. Inquiries regarding registered character code sets should be addressed to NARS.

GENERAL SERVICES ADMINISTRATION
NATIONAL ARCHIVES AND RECORDS SERVICE

MAGNETIC TAPE RECORD INVENTORY

RECORDS CONTROL NO. *(FOR NARS USE)*

3. AGENCY/OFFICE CREATING RECORD	4. LOCATION OF EDP INSTALLATION

5. OFFICIALS RESPONSIBLE FOR SYSTEM *(Name)*	6. BUILDING ROOM NUMBERS	7 TELEPHONE NUMBERS
A. SPONSOR	A.	A.
B. EDP COORDINATOR	B.	B.

8. DESCRIPTION OF RECORD CONTENT

A. SYSTEMS TITLE

B. FILE(S) TITLE

C. PURPOSE OF COLLECTING DATA

D. SCOPE *(Content and coverage)*

E. ARRANGEMENT-SORTING SEQUENCE *(Logical record key)*

9. SOURCE DOCUMENT(S) USED AS INPUT *(Attach samples)*

10. USE OF FILE OUTPUT-PUBLICATION TITLE *(Attach copy)*

11. DATES OF FILE	12. ONETIME STUDY OR SURVEY (S)	13. PERIODIC UPDATE *(Specify period)*
A., FROM		
B. TO		

14. FILE SPECIFICATION DESCRIPTION *(Enclose record format and data elements description)*	15. DUPLICATION ELSEWHERE *(Physical or content)*

16A. CPU MFG.	16B. MODEL NO.	17. NO. OF REELS	18. REEL LENGTH	19. BPI USED	20. NO. OF TRACKS
16C. TAPE DRIVE	16D. MODEL NO.				

21. CURRENT RETENTION PERIOD	22. RECOMMENDED RETENTION PERIOD	23. DATE REELS WILL BE TRANSFERRED TO NARS

24. USE MADE OF TAPE RETAINED OVER TWO YEARS

25. DEFENSE CLASSIFICATION AND/OR RESTRICTIONS ON USE OF TAPE

GSA FORM 7036 (REV. 3-71)

INSTRUCTIONS AND EXAMPLES FOR USE IN PREPARING DATA ARCHIVES INVENTORY

SEC. I. PHYSICAL CHARACTERISTICS

1. Type of reel	Cassette, cartridge, reel, etc.

SEC. II. RECORDING MODE INFORMATION

1. Number of tracks	7, 9, other
2. Density in BPI	128, 200, 250, 556, 800, 1600, other
3. Character code used	IBM, BCD, FIELDATA, BINARY, EBCDIC
4. Frame parity	even, odd, mixed
5. Mixed mode reading control	If parity varies from block to block, describe how software determines the parity of the block to be read. Example is lookahead bits in the IBM 7090 series.
7. Blocking factor	If fixed number of logical records per block, show number. If variable number of records per block, describe control technique in 8 below or use additional sheet if necessary.
8. Logical and physical record length control	If blocks and records are fixed length with no software control characters, mark "NONE". If blocks or logical records have counter fields specify mode with reference to system software manual; e.g., IBM 7070 IOCS, type 4 records.

SEC. III. RECORDING SYSTEM INFORMATION

5. Operating system used	Name DOS, MOD I Extended, etc. Version number Revision 16 Level or type PCP, HASP, MFT-II, MVT
6. File Structure Information	Most software systems allow considerable variation in label content and placement even when using "standard" labels. The following example shows a typical file structure and how it should be depicted on the reverse side. IHDR (84 characters) TAPE MARK CHECKPOINT/RERUN TAPE MARK DATA RECORDS TAPE MARK EOF (end of file label) TAPE MARK TAPE MARK Such a sequence of records and tape marks should be shown on line 6 as follows: TM Ø LABELS 1 (LABEL LENGTH 84) TM 2 DATA RECORDS TM 1 FOR TM__ EOF TM__
10. Checkpoint location	Show, for example, as "between the two tape marks immediately preceding the data records."
13. Control totals	Indicate whether and where the record counts are found in the trailer labels or within a logical record such as the one containing the sentinal characters. Hash and control totals other than record counts are usually non-standard in all software systems. Therefore, indicate what data fields are used and indicate whether binary or decimal arithmetic is used.

Approved For Release 2001/08/09 : CIA-RDP74-00390R000300440012-4

DATA ARCHIVES INVENTORY

(Read Instructions on reverse)

FOR NARS USE ONLY

SECTION I - PHYSICAL CHARACTERISTICS

1. TYPE OF REEL	2. LENGTH *(Feet)*	3. WIDTH *(Inches)*

SECTION II - RECORDING MODE INFORMATION

1. NUMBER OF TRACKS	2. DENSITY IN BPI	3. CHARACTER CODE USED	4. FRAME PARITY

5. MIXED MODE READING CONTROL

6. LOGICAL RECORD LENGTH

LENGTH _____

☐ WORDS ☐ CHARACTERS ☐ FRAMES

☐ FIXED ☐ VARIABLE ☐ UNDEFINED

7. BLOCKING FACTOR *(Logical records per physical block)*

8. LOGICAL AND PHYSICAL RECORD LENGTH CONTROL

	(1) NONE	(2) COUNTER	(3) SPECIAL CHARACTER	(4) DESCRIBE
A. LOGICAL	☐	☐	☐	
	(1)	(2)	(3)	(4) DESCRIBE
B. PHYSICAL	☐	☐	☐	

9A. END OF FILE PADDING CHARACTER _____ IN POSITIONS _____ TO _____ OF FIRST LOGICAL RECORD AFTER LAST LOGICAL RECORD OR NONE _____.

9B. IS LAST BLOCK FULL LENGTH _____ OR SHORT _____?

9C. INDICATE END OF REEL PADDING FIELD IF DIFFERENT FROM ABOVE _____

SECTION III - RECORDING SYSTEM INFORMATION

1. CPU MANUFACTURER	2. MODEL NO.
3. TAPE DRIVE MANUFACTURER	4. MODEL NO.

5. OPERATING SYSTEM USED TO GENERATE FILE

A. NAME	B. VERSION NUMBER	C. LEVEL OR TYPE

6. FILE STRUCTURE INFORMATION *(See reverse for Instructions)*

TM _____ LABELS _____ (LABEL LENGTH) _____) TM _____ DATA RECORDS TM _____ EOR TM EOF TM _____

7. FILE ID LOCATION	8. FILE ID CONTENTS	9. REEL SEQUENCE NUMBER LOCATION	10. CHECKPOINT LOCATION *(If applicable)*

11. LOGICAL RECORD COUNT LOCATION	12. PHYSICAL RECORD COUNT LOCATION

13. HASH OR CONTROL TOTALS *(If applicable, describe)*

SECTION IV - REMARKS

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INSTRUCTIONS AND EXAMPLES FOR USE IN PREPARING DATA ARCHIVES INVENTORY

SEC. I. PHYSICAL CHARACTERISTICS

1. Type of reel	Cassette, cartridge, reel, etc.

SEC. II. RECORDING MODE INFORMATION

1. Number of tracks	7, 9, other
2. Density in BPI	128, 200, 250, 556, 800, 1600, other
3. Character code used	IBM, BCD, FIELDATA, BINARY, EBCDIC
4. Frame parity	even, odd, mixed
5. Mixed mode reading control	If parity varies from block to block, describe how software determines the parity of the block to be read. Example is lookahead bits in the IBM 7090 series.
7. Blocking factor	If fixed number of logical records per block, show number. If variable number of records per block, describe control technique in 8 below or use additional sheet if necessary.
8. Logical and physical record length control	If blocks and records are fixed length with no software control characters, mark "NONE". If blocks or logical records have counter fields specify mode with reference to system software manual; e.g., IBM 7070 IOCS, type 4 records.

SEC. III. RECORDING SYSTEM INFORMATION

5. Operating system used	Name: DOS, MOD I Extended, etc. Version number: Revision 16 Level or type: PCP, HASP, MFT-II, MVT
6. File Structure Information	Most software systems allow considerable variation in label content and placement even when using "standard" labels. The following example shows a typical file structure and how it should be depicted on the reverse side. IHDR (84 characters) TAPE MARK CHECKPOINT/RERUN TAPE MARK DATA RECORDS TAPE MARK EOF (end of file label) TAPE MARK TAPE MARK Such a sequence of records and tape marks should be shown on line 6 as follows: TM Ø LABELS 1 (LABEL LENGTH 84) TM 2 DATA RECORDS TM 1 FOR TM__EOF TM___
10. Checkpoint location	Show, for example, as "between the two tape marks immediately preceding the data records."
13. Control totals	Indicate whether and where the record counts are found in the trailer labels or within a logical record such as the one containing the sentinal characters. Hash and control totals other than record counts are usually non-standard in all software systems. Therefore, indicate what data fields are used and indicate whether binary or decimal arithmetic is used.